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ABSTRACT

To determine preschool children's responses to various television program formats, and to discover which would be most effective in holding attention, observers recorded children's reactions to 115 lesson segments viewed in their homes. All behavior responses to elicited and unelicited stimuli were recorded, using a printed form and coding system. Responses to a montage of taped commercial and public-television programs, shown in a laboratory environment, also were recorded. Ten major techniques of presentation were identified and responses to each scored. The amount of viewer attention also was rated. It was found that variety of format and short program segments were most effective in promoting response and holding attention. Coding forms and a ranking of segments by viewer interest are appended. (SK)

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Visual Attention and Enthusiasm to Children's Television Programs

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Visual Attention and Enthusiasm to
Children's Television Programs

Home-Oriented Preschool Education (HOPE), as developed by the Appalachia Educational Laboratory (AEL), utilizes a three-component approach to education for three-, four-, and five-year-old children. It includes the use of home intervention, group experience, and televised instruction.

The first component requires a trained paraprofessional to go into the home of each child in an assigned region to deliver weekly instructional materials and to interact with parents and children for perhaps 60 minutes each week. In the second component, the child attends a two-hour group session once each week under the supervision of a trained professional. In the third component, televised lessons are used to introduce basic skill instruction, encourage the desire for learning, and provide new experiences for young children. The 30-minute lessons are broadcast into children's homes five days a week.

From the beginning of the HOPE program, the television component has been intended to provide the substance of the HOPE curriculum directly to the child. Functioning in this way, it was necessary to produce a program which not only sustained interest, but also provided a balance of activities necessary to optimum learning within the home environment.

However, research on the viewing habits of preschool children had primarily been done in a relatively artificial environment, in which a child was seated in front of a television set, was observed by an unfamiliar adult, and was not provided with a setting similar to the one where actual viewing would occur. Almost no research had attended to the types of programming techniques which hold children's attention, and hence, produce enthusiasm and/or interaction. The objectives of this presentation are to delineate techniques for

classifying and analyzing children's responses to various types of television programming designs for preschoolers and outline types of presentations which were most effective in holding children's attention or eliciting responses from viewers in a given situation.

Review of Previous Research

Research on the viewing habits of children has been conducted using observational rating scales (Becker and Wolfe, 1960; Burns and Smith, 1966; Bridges, 1960), mechanical recording devices (Guba and Wolf, 1964), or paper and pencil interest inventories. Each technique has both advantages and disadvantages. For example, a mechanical recording device has as its prime disadvantage the presence and consequent distraction of the apparatus itself. Some techniques have used time intervals which may or may not coincide with the television segments and, hence, do not provide information which is directly related to the attention of children to various types of presentations.

A study of children's attention to different television presentations was conducted by Palmer and his associates (1968). After reviewing various evaluation procedures, Palmer and his associates selected an observer rating scale, with a periodic distractor introduced during the programming. The authors were thus able to delineate an interest-level for each particular program segment.

Sproul (1973) used Sesame Street as a program stimulus and videotaped children in single and group viewing sessions. Although the viewing time was about 81%, it is difficult to determine whether this figure could be applied to the entire series because only one Sesame Street program was used.

Hilliard (1967) indicated that, although age levels have been used as primary determinants in designing individual programs for children, there are more specific techniques which should be used. These techniques, however, do not deal specifically with types of presentations. For example, he suggested that if one wants to present an educational program, one should avoid simple repetition of material that children viewing the program may have gotten in school. Hilliard indicated that a television script writer may--on any show--add puppets, marionettes, live actors, film, tape, standard electronic devices, or special electronic tricks. However, the relative contribution of each technique to the success of a program was not indicated.

One of the more recent and comprehensive studies of attention to and learning from television for preschoolers was conducted by the Sesame Street staff (Children's Television Workshop), headed by Barbara Reeves (1970). This study used Palmer's distractor technique to measure attention and a number of program specific measures in a pre-post test design to measure learning of content. Unfortunately, no attempt was made to relate learning with visual attention or enthusiasm.

Much of this research was done in a relatively "artificial" environment, in which a child was seated in front of a television set, was observed by an unfamiliar adult, and was not provided with a setting similar to the one where actual viewing would occur. The variables attended to in many of these studies was either attention span or eye contact. Almost no research has attended to the types of programming techniques which hold children's attention and hence, produce enthusiasm and/or interaction.

In order to generate a curriculum for the HOPE program which would hold preschool children's attention, it was thus necessary for AEL to determine

what types of programming techniques generated and sustained a high interest level in children.

Method and Procedure

AEL initiated two studies to determine what types of presentations of television programs generated visual attention in preschool children and also what types of presentations elicited verbal and non-verbal responses from the children.

Procedure I

The first procedure involved an observational system to provide data on children's reactions to about 115 television lessons. A home visitor who was regularly in the children's homes used a coding system to record children's behavior responses to both elicited and unelicited stimuli on the television program. The television program was designed to establish a strong personal relationship between the performer and the young viewer at home. This personal relationship and the tendency of preschool children to react overtly during the telecasts made it possible to use the observational system (designed by Miller, 1970) to evaluate the effect of each programming technique on children's behavior.

The observational system was designed to provide the observer opportunity to code children's behavior responses to both elicited and unelicited stimuli. Table 1 presents a verbal description of the categories which were designed for observing children's behavior and also the basic rules for coding responses.

The first three categories (NVR, VR, and NR) pertain to children's behavior responses which were elicited by the TV program, while categories four through seven (VE, NVE, VN, NVN) deal with children's behavior responses which were not elicited by the TV program.

Table 1

Television Viewer Behavior: An Observational System

Category	Description
NVR	Physically Responds to Suggestions, Directions, or Questions: The viewer dances, paints, or moves as suggested or directed by the television "teacher" or shakes his head yes or no to a question.
VR	Verbally Responds to Suggestions, Directions, or Questions: The viewer responds by saying something: repeating a poem, words, or letter; answers yes or no.
NR	No Response to Suggestions, Directions, or Questions: The viewer does not comply as requested by the television "teacher", either physically or verbally.
V. Enthus.	Verbal Enthusiasm: The viewer says something that indicates he is excited about something in the program. This can be a sound of glee as well as an intelligible word.
NV Enthus.	Non-verbal Enthusiasm: Physical motions such as the clapping of hands that indicate the viewer is excited about something in the program.
V Neg.	Verbal Indication of a Negative Reaction: The viewer yawns aloud, says words or makes sounds that indicate disgust, boredom, or a negative feeling about the program.
NV Neg.	Non-verbal Indication of a Negative Reaction: The viewer looks away from the television screen, leaves the room, plays with a toy, or engages in other actions indicating disgust, boredom, or a negative reaction to the program.

Ground Rules:

1. Whenever verbal and non-verbal behavior occur simultaneously, the tally is placed in the verbal category.

2. When the television "teacher" requests the viewer to engage in a sequence of behavior or say a sequence of words or letters, doing the whole sequence results in only one tally.

3. When the observer is not sure the television "teacher" has requested an overt response, no tally is made in the first three categories. If, despite the vagueness of the "teacher's" remark the viewer responds, this behavior is coded in category 4 or category 5.

4. The observer initially encourages the viewer to watch the program with her but does not coerce him. However, despite the actions of the viewer, the observer watches the whole program and gives the impression of being quite interested in it.

The home visitor was assigned to watch the television program with a different child each day. A different child was observed each day so that over a period of time a representative sample was obtained. As unobtrusively as possible, each home visitor coded the behavior of the child she was observing according to the defined categories, using a standardized code sheet. (See Appendix A for the code sheet.)

The 28-minute television program was divided into five five-minute intervals and one three-minute interval as indicated by the rows on the coding sheet. The columns indicate the categories of behavior. Every time the television "teacher" made a suggestion, asked a question, or attempted to elicit a response from the viewer, the home visitor made a tally in one of the first three columns. This tally indicated whether the viewer responded verbally, non-verbally, or not at all. The remaining four columns represented viewer behaviors that were not elicited. A tally was made in the appropriate column each time one of these behaviors occur. To the right of the matrix were the numerals 0, 1/4, 1/2, 3/4, and the word ALL. At the end of each five-minute interval, the paraprofessional circled the figure that most closely represented the amount of time the viewer had his eyes on the television screen.

At the bottom of the code sheet was a place to write remarks. This area was used to describe unusual circumstances occurring during the program such as prompting by the mother, a paddling, or anything that had a significant positive or negative effect on the viewer. Reactions, in behavioral terms, to specific segments were also written here. Only those data obtained from columns four through seven were analyzed; i.e., that data which gave an indication of the types of presentations which "turned children on" (non-elicited responses) rather than that data which forced children to react (elicited responses).

It should be noted that the data were taken from observing only a small number of viewings of each television program. When a particular programming technique was used on several occasions and that technique consistently rated high or low on amount of enthusiasm elicited, a decision regarding the continued use of the techniques could be made, objectively and reliably. The data presented are the proportions of unelicited positive behavior to total unelicited behavior (enthusiasm ratio). High enthusiasm was defined to be where over 90% of the viewers' unelicited responses were positive. Similarly, low enthusiasm was defined to be where less than 50% of the unelicited responses were positive.

Procedure II

The second procedure involved showing a collection of various types of programming techniques in a natural relaxed atmosphere, with many of the same distractions as would be present in the home. Ten hours of television programs for preschool children were videotaped as they were broadcast from local stations. The ten hours of programming consisted of the following shows: Zoom, one hour; Captain Kangaroo, three hours; Misteroger's Neighborhood, three hours; and Sesame Street, three hours. These shows were taped in black and white so as to have comparability with the first procedure. These shows were considered as a pool of presentation tapes, including monologue and dialogue sequences, singing and dancing, film and narration, and a number of types of animation. From this pool, two taped "shows" were prepared by combining various segments from the programs listed above. In response to a request by the National Institute of Education (NIE) AEL had also produced two pilot television programs for a new children's series.

These four tapes were shown to a sample of 22 children, aged four, five, and six, selected from a local nursery school. Approximately 40% of the children were four and 60% were five- and six-year-olds. The children were brought (two at a time) to a central location to view the tapes. It was decided to record two children's behavior watching the segments simultaneously for several reasons. First, brothers and sisters are frequently present in the home and provide distractions during television programs. Second, the potential for distraction with two children in the room provides variance in viewing behavior. Finally, taping and coding the behavior of two children at one time reduced the amount of time needed for observation and coding of behavior.

The children were placed in a partitioned enclosure approximately ten feet wide and twenty feet long. They were allowed to sit on the carpeted floor and several toys were available in the enclosure. The television monitor and camera were placed approximately thirty degrees apart with the camera positioned to allow observation of the children's eye contact with the screen and to allow observation of the entire viewing area.

The children were told that they were going to see some television programs, and that afterwards they would be asked to tell which part they liked the best. After seating the children, the examiner started the recording equipment and left the room. As a rule, no adult again entered the room unless there was some indication of equipment failure or one of the children asked for something.

Each child watched one group of segments from other programs first and then viewed one of the two AEL pilot tapes for a new television series. Since it was not possible to obtain the pilot tapes and segments at the same time, all children saw the segments first and the pilot tapes second. The videotape

of the children was then played back through a standard television monitor, and their behavior was coded at fifteen second intervals according to the category system described in Table 2.

Observations were made every fifteen seconds for an interval of six seconds. In other words, the children's behavior was coded for a six second interval centered around each fifteen second point on the videotape of their performance.

The interrater reliability correlation coefficient was .89 for the sample segments from the other television programs and was .94 for the pilot tapes. Since it was possible that sampling behavior at fifteen second intervals would exclude certain patterns of responding, a "retest" correlation was done relating two sets of tallies covering different time intervals. A second set of responses was coded using different coding points (ten seconds later on each segment). The correlation between these sets of scores was .91, indicating that the procedure provided reliable estimates of overall behavior. Copies of the coding sheets for the four tapes are presented in Appendix B.

Results

Both studies were conducted for the primary purpose of product improvement through evaluative techniques. The results of the first procedure will be presented initially and then followed by the results of the second procedure.

Procedure I

Analysis of the data indicated that there were ten (10) major techniques of presentation used in the 115 television lessons. The areas identified were:

Table 2

Television Behavior: An Observational Coding Schema

Category	Description
PU	Program Unrelated Response: This category was defined as any behavior which took place while the child was not watching the screen, and which did not involve an interaction with the other child or response to television cues.
ENV	Elicited Non-verbal Response: In this case the child performed some action at the request or suggestion of one of the television characters. The behavior may be rhythmic or pantomime in nature.
EV	Elicited Verbal Response: This category includes all spoken responses made to television cues. This category applies only to those responses made to direct questions or commands.
NO	No Overt Response: Behavior in this category includes only those responses which involve direct eye contact with the screen. This is a measure of visual attending to the program content.
VE	Verbal Enthusiasm: This category includes all verbal behavior such as laughing, singing along with television characters, or statements such as "I like this."
NVE	Non-verbal Enthusiasm: Behavior such as smiling, non-elicited pantomime or mimicing the behavior of characters on the screen, and moving with music contained on a program segment are coded in this category.
NVN	Non-verbal Negative Response: Behavior in this category includes all non-verbal signs of disapproval, such as frowning, crying, etc.
VN	Verbal Negative Response: This category includes all negative statements about program content, such as "I don't like this" or simple negative exclamations.
CCI	Cross-child Interaction: Any interaction between the two children which does not relate to program content is coded in this category. The interaction may be verbal or may include play, wrestling, or games.

1. Animation
2. Film
3. Visitors
4. Arts and crafts
5. Animals
6. Audio and perceptual discrimination
7. Puppets
8. Models and 3-D objects
9. Music
10. Stories

Each of these ten (10) major areas were found to contain types of segments which produced high degrees and low degrees of enthusiasm. (Specific examples of segment types may be found in Appendix C.)

1. Animation. Simple animation was used primarily to teach and familiarize the viewer with letters and numerals. This technique was expanded to give life to stories and to provide motion and action to concepts and charts.

There were several program techniques that produced a very positive reaction in children almost every time they appeared on screen and one of these was animation. The mean enthusiasm ratio was 98.6. The style used was a simple form without complicated detailed art work or cluttered backgrounds shot frame by frame (on 16 mm film).

There were two kinds of animation used. One was simple line drawings or cutouts with the focus on objects or characters. The second form is better known as "pixilation" and involved the use of 3-D objects positioned frame by frame to create movement. Each technique seemed to have equal viewer acceptance. The length of most animations was about 15 to 30 seconds, except when used to illustrate a story. These ran about four or five minutes.

The continuous use of certain types of animation, such as "pop-out" charts, seemed capable of eliciting a physical response (pointing to answers on screen) because the children knew that there was time allowed to respond before the answer appeared.

2. Film Segments. The 16 mm film was used to bring the world outside the studio to the young viewer. The data showed that there were many very high interest film segments, especially those which showed activities that children enjoyed doing or seeing others do. The mean enthusiasm ratio for these segments was 92.6. There were indications for a need to very carefully plan films to keep them to reasonable lengths. Segments over five or six minutes began to show drastic drops in interest. The mean enthusiasm ratio for these segments was 44.9.

Most of the film used was silent and had music and narration added on in the studio. These films generally seemed to have scored lower than the films that had sounds recorded on location.

In narrative films, narrations by puppet characters and children seemed to rate higher than those by an unidentified adult or by on-camera personalities. Upon analyzing the use of film content, it seems that field trips to facilities (such as bakeries, libraries, art gallerys, etc) didn't hold children's interest as much as did those films which included a story line and/or followed someone through such facilities where the focus was on an individual or individuals.

Because of the lack of editing equipment in the television studio, film segments were used as substitutes for "in-studio" work when costumes and/or scenery changes were required. This use of films seemed to have no different effect on children than did those segments actually done in the studio.

3. Visitors. Throughout the series there were numerous occasions on which support people "visited" the television teacher. Most were staff members considered as regulars. The television program was established around one main character. There were frequent appearances by support characters and infrequent "new" visitors on the program. These people were all grouped into the same major category.

It is quite clear that what the visitor did when on camera was of more significance than who he was. For example, the visits on camera by a regular staff member received high ratings when he showed or discussed puppets, but his visits received low ratings when he presented animals.

Interest in visits of other support characters seemed also to depend on what they did. Another regular staff member received high ratings when drawing pictures, but he received low ratings when working in a workshop or demonstrating something.

Children as visitors had strong appeal, if the segments weren't too long. But it must be noted that the viewers became more passive as the children on camera increased their involvement.

There seemed to be no pattern or trend toward the acceptance by the viewing children of one type of visitor over another based on such characteristics as age, sex, occupation, costuming, etc.

An interesting response was recorded when a group of visitors appeared together for a party, such as at Christmas or Halloween. The enthusiasm scores were high, and informal feedback indicated that the excitement of the group of visitors seemed to be transmitted to the viewers and that it often carried over after the program had concluded.

Analysis of the data indicates that the mean enthusiasm ratio was 100.0 for those segments with visitors which ranked high. However, for those segments ranking low in interest, the mean enthusiasm ratio was 33.0.

4. Arts and crafts. Demonstrations of arts and crafts were used on the series to introduce children to a variety of experiences, both in motor skills and in creative expression.

Activities in which the children were asked to use their hands directly with such materials as clay, dough, paste, finger paints, and materials of different textures received the highest degree of interest and enthusiasm. The mean enthusiasm ratio for such activities was 94.4. The use of brushes, scissors, and tools seemed to be of less interest. Activities which involved a "step-by-step" instruction or required controlled use of materials scored lower. The mean enthusiasm ratio for such activities was 39.8.

The placing of these types of activities in the daily program format seemed to have some bearing on the attention given to the rest of the program. Early introduction of arts and crafts activities into the programs made it hard to get children to stop working on such activities and go back to viewing the rest of the program. If the activities were placed nearer the end of the program and carried over into the closing (encouraging them to continue working after the program went off the air), many of the children would continue to work and not even be aware that the program had ended. The late placement also tended to cause children to become restless while waiting for the anticipated activity to begin.

As noted, the activities that seemed to have the most appeal are those which involved tactile expression. These are also the messiest type and need to be well developed, because most children who are going to work alone at home are either in their living room or family room and not at a table as demonstrated in the studio.

5. Animals. There were a variety of animals used on the series, and the feedback data showed a high interest in them. It was not possible to

compile a listing of animals presented and compare them by categories, such as wild animals vs. domesticated, large vs. small, or common vs. exotic. A factor that was obvious in connection to interest in the animal on camera was the animal's performance. Animals that were lazy or sleepy (often because of the hot TV lights) and inactive animals had little appeal, but frisky or playful animals or those that were active (such as playing or eating) ranked high in interest.

Animals restricted by cages or aquariums were low in appeal but those who were on leashes or placed in a small area (such as a fenced yard) were more appealing.

There was also a strong interest in animal families, especially mothers with their young. Another strong interest area was animals considered to be pets of the on-camera talent or their visitors.

The high interest segments had a mean enthusiasm ratio of 89.6, whereas the low interest segments had a mean enthusiasm ratio of 33.0.

6. Audio and perceptual discrimination materials. The television lessons were responsible for the introduction of many basic skills and concepts, and there were many simple materials used. One of the HOME program objectives was the recognition of letters, numerals, and geometric shapes. To provide situations in which these could be discriminated, the on-camera talent often worked with materials found in the home. Relying on demonstrations at the television teacher's kitchen table and supported by small, interesting toy objects, lessons were successfully taught on these concepts. Games that involved such skills as identifying colors, shapes, and amounts were created and played on camera with the viewer at home.

The use of tape recorders and record players seemed to be effective in getting the viewer to listen to sounds for purposes of identification and discriminations. The mean enthusiasm ratio for such activities was 91.3.

The sorting of objects was only acceptable when it was developed as a part of the plot in the show, such as finding enough objects of the same color to send to someone. When a sorting activity was presented as a straight learning exercise, the attention and interest were low. The mean enthusiasm ratio for segments which ranked low in interest was 40.0.

7. Puppets. Puppets received an important place in the AEL children's television series because of their demonstratably universal appeal. Puppets have already proved their value in television, and the data collected on puppets in our study substantiate this fact. Because of time and space and the need for variety, many types of puppets were presented on the television lessons. These types included hand puppets, marionettes, rod puppets, shadow puppets, and finger puppets. Puppets were used individually as well as in groups, such as in Magic Hollow (the home of the puppets). Certain puppets provided someone for on-camera talent to react to, others puppets provided comic relief or a musical change of pace, while still other puppets presented entire short stories or episodes.

The puppets with the strongest appeal were those who were continually involved in short stories, such as the residents of Magic Hollow who had time to develop a predictable personality. The construction of bag puppets or stocking puppets also ranked high in interest.

One puppet in particular was used to elicit strong verbal responses from the viewer by being involved in games and discussions with the on-camera talent and by giving delayed responses to answers so that the viewer could answer first. The mean enthusiasm ratio for such segments was 97.9.

There were few negative responses recorded for the puppets, but the interest tended to be much lower for stories acted out with marionettes or shadow puppets. The mean enthusiasm ratio for these segments was 58.8.

8. Models and 3-D objects. On many occasions models and an array of objects were used on the television series for teaching purposes.

The range of presentation types that were appealing and interesting to children was vast, but several types were used with enough consistency to be rated.

Those segments with high interest appeal included the use of mechanical things, such as model trains, cars, and boats. The unwrapping of packages (surprise element) and the use of such things as a jack-in-the-box which had a predictable action were also appealing. The viewing of sets of things (like a model town or a series of similar objects, such as circus animals) were appealing to children unless the objects were presented one at a time. The idea of putting together something was also appealing if the length of time for the activity was short. The mean enthusiasm ratio for such activities was 100.0.

The use of the television series neighborhood model (that showed the homes of all the television personalities) was interesting only when cars or figures were manipulated in the scene. To just discuss things in such a model produced very low levels of enthusiasm. The mean enthusiasm ratio for segments ranking low in interest was 50.0.

9. Music. Music was an integral part of the telecast in both a direct way and as background to other activities. Music was used not only to support other techniques; it also became an activity for viewer involvement. The singing of simple songs by the children along with the on-camera talent generated enthusiasm, especially if the talent took the time to go over the words and melody with the children. In many of the songs the children were not only asked to sing, but also to clap out the rhythm. Responses to this technique were more enthusiastic than when there were not others on the screen doing it

too. When the action was carried on by others on the screen, the viewer had a tendency to sit and be entertained instead of participating. The most impelling type of singing was call-and-response. These songs were written so that the child could respond at the proper time with a familiar phrase.

There was also a strong interest exhibited by the children in watching musicians play their instruments, unless they played too many songs (usually more than two). Children also seemed to enjoy doing activities, such as coloring or fingerpainting, to music. They also enjoyed marching and parading or playing along on home-made instruments.

The most talked about music was Arlo Guthrie nonsense songs pantomimed by a frog puppet. These short and silly songs became a much anticipated part of the series. The mean enthusiasm ratio to these types of musical activities was 98.0.

The children didn't seem too interested in moving (dancing) to music except when there were specific instructions, such as "bending like a tree in the wind" or "soaring like a bird". They also didn't enjoy songs which were pantomimed by performers. The mean enthusiasm ratio for these segments was 46.8.

10. Stories. On most of the programs, a story was read. The responses and interest to these stories were as varied as the production methods used.

Most of the stories used on the television series were from books and were simply presented by someone sitting and reading to the camera. In order to vary the way a story was read, a series of techniques were used, including making slides of each illustration and cutting to them or mounting the pages of the story book on camera and panning with the reader. The types of stories that seemed to rank highest were those involving mystery or sentimentality.

Original stories created by the program staff met with a large degree of success when the stories' authorship was identified. Stories acted out by the Magic Hollow characters were also well received. The mean enthusiasm ratio for such story presentations was 97.2.

The clarity of the pictures and length of the story had a direct bearing on interest levels. Stories with detailed and complicated pictures had lower visual appeal. Long stories were often broken up by pausing for comments or asking questions, but asking questions at the end of the story wasn't a satisfactory technique. The mean enthusiasm ratio for this story presentation technique was 39.2.

Procedure II

A primary question which can be asked about any television presentation concerns the amount of time spent by the children in eye contact with the screen (visual attention). Figure 1 indicates the percent of time spent in viewing the segments taken from Zoom, Misteroger's Neighborhood, and Sesame Street. The percentage amounts were calculated by dividing the total number of tallies in the "No Response" category by the sum of the "Program Unrelated", "No Response", and "Cross Child Interaction" categories. This figure represents the amount of time spent in "positive" viewing, where the child was not making any overt responses to environmental cues. Although it is likely that the children were still attending to the auditory content of the programs while they were looking away or engaged in single play, the visual content of the segments is of primary concern in measuring interest.

Figure 2 indicates a similar percentage of time spent in viewing the second collection of segments, taken from Sesame Street, Misteroger's Neighborhood, and Captain Kangaroo.

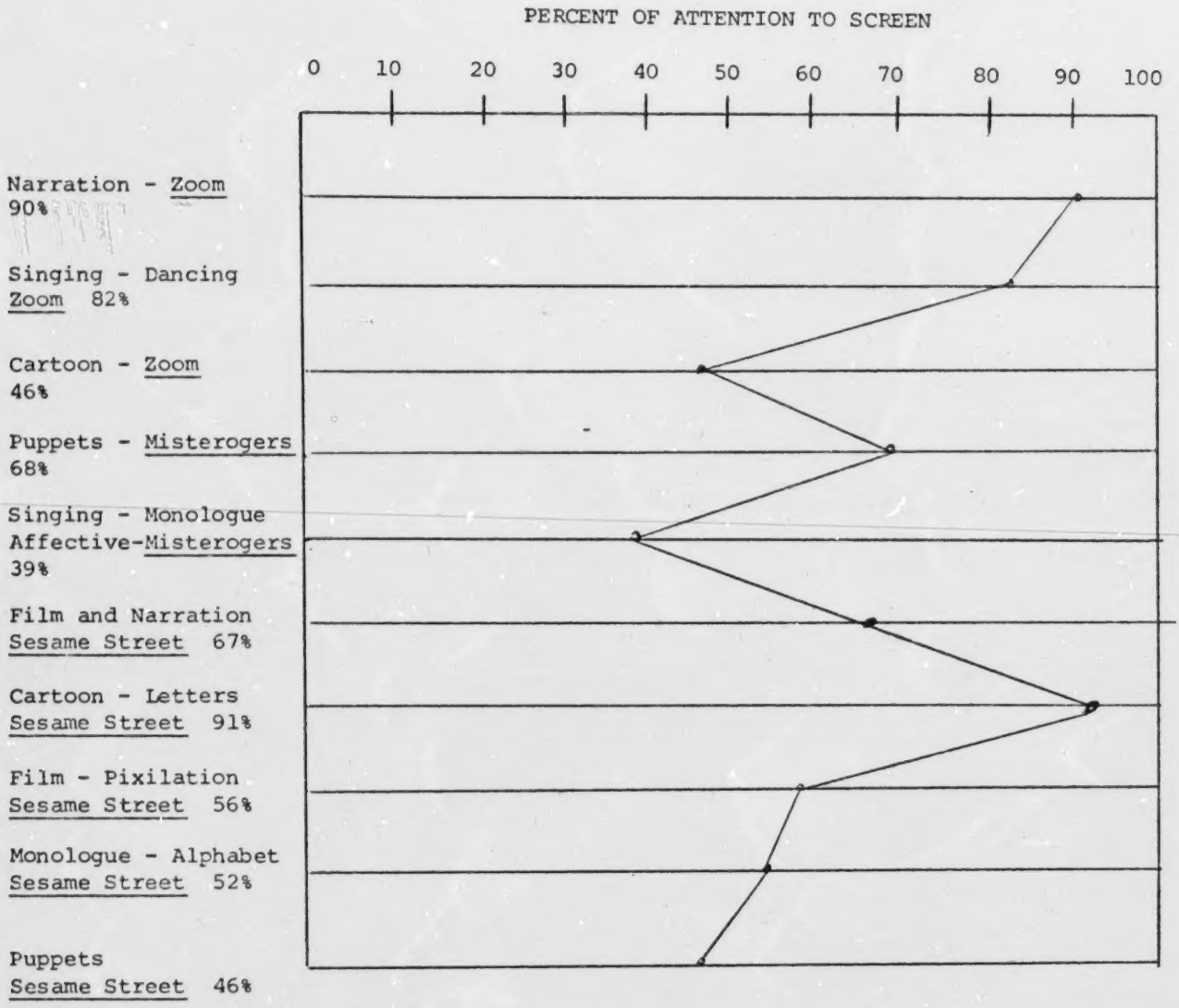

Figure 1

Percent of Attention to Screen for Segments of All Available Programs for Children - Tape 1

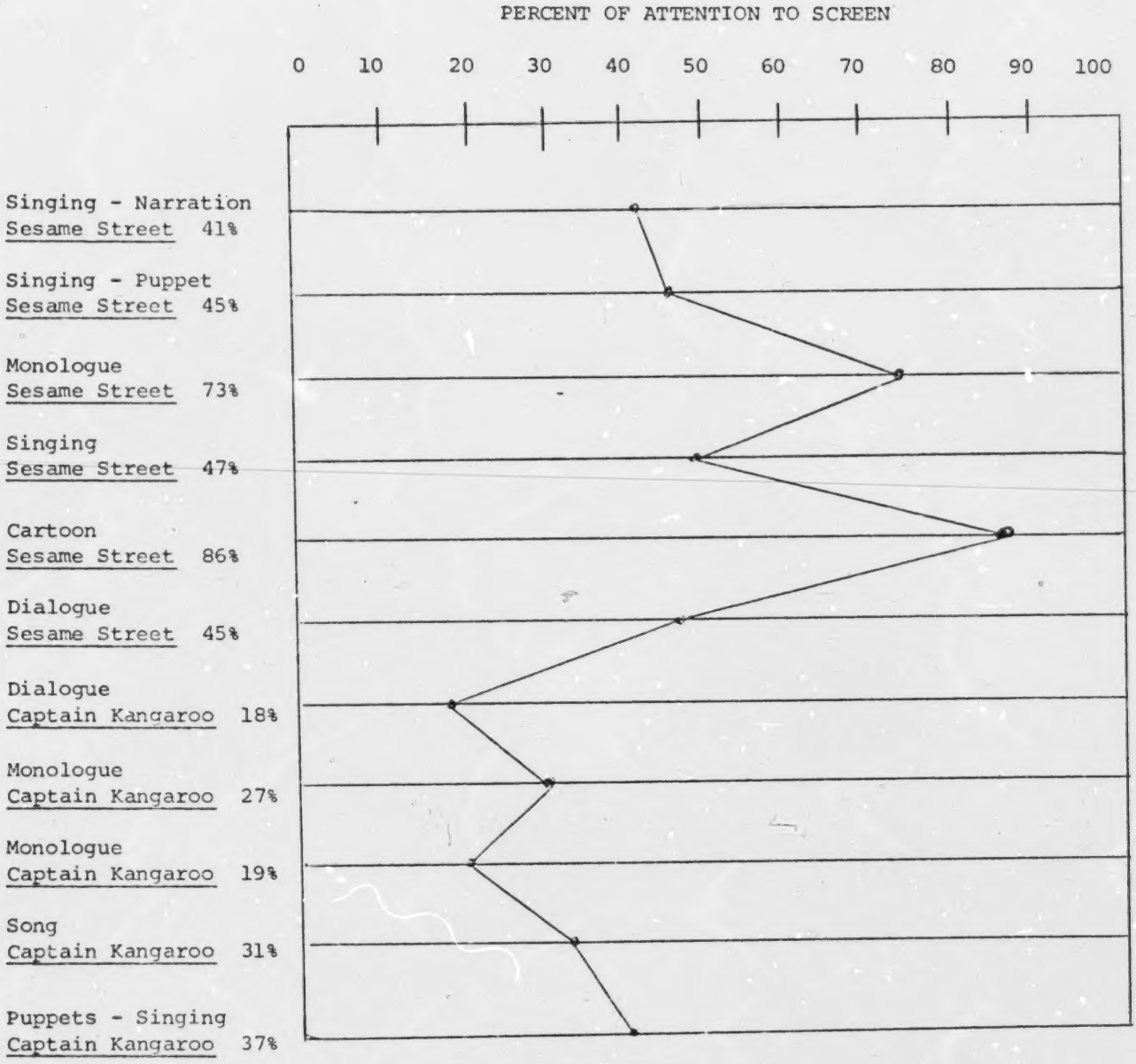

Figure 2

Percent of Attention to Screen for Segments of All Available Programs for Children - Tape 2

In both cases, a wide variance is present in the amount of viewing time across segments and programs. If we assume that the various segments shown to the children represent a sample of the overall attention holding quality of the programs from which they were selected, than an average percent of attention can be calculated for each program.

The average percent of overall viewing of the various programs represented is as follows: Captain Kangaroo, 26%; Misteroger's Neighborhood, 54%; Sesame Street, 59%; and Zoom, 73%. While it may be argued that the figure for Zoom may be spuriously high, since only three segments were taken from that show, the remainder of the segments probably represent a fair sample of overall program content.

As can be seen from Figures 1 and 2, percentage of viewing time is quite variable within each collection of segments. Those portions which involved monologues or narration had the greatest variation in attending, ranging from a high of 91% attending to an animated Sesame Street segment to a low of 18% attention to a Captain Kangaroo monologue. If this category is subdivided in actual monologue and narration, the average percent of time attending is quite different. The percentages are as follows: narration, 75.2% time attending; and monologue, 36.1% attending. It seems apparent that the relatively unchanging stimuli presented by a single individual is far poorer at holding attending than the rapidly changing stimuli of an animated story or filmed sequence.

Monologues and narration produced the highest overall average percent of time attending with 52.3%, while songs averaged second with an average of 48%, and dialogues ranked lowest with an average of 44% time spent in viewing the screen.

Generally, (and not surprisingly) children attended to short unpredictable sequences of events and to films of children and animals accompanied by narration more than they did in the relatively static monologues of adults.

A question which may be voiced at this point concerns the importance of visual attention as an indicator of program worth. Because it is readily observed, it traditionally has been a major variable in assessing program quality and, indirectly, the learning which may result from viewing the program. However, visual attention is not necessary when the primary mode of instruction is verbal. For example, if a character is reciting the alphabet, then it is not necessary for the child to watch the screen to learn the proper sequence of letters. Or, if the main purpose of a particular sequence is to communicate an abstract principle (sharing, self worth, etc.), then the child does not have to watch the character to understand the message.

The danger exists, however, that if a child looks away from the screen, he may be distracted completely by another object or person in the room. Thus, it would seem that although visual attention is not the only variable which should be considered, it is of major importance in designing segments which will provide a maximum opportunity for the child to learn.

Viewing of the pilot tapes produced the average percentage of attending shown in Figures 3 (Pilot Tape 1) and 4 (Pilot Tape 2). For the first pilot tape, the highest percentage of attending (72%) was elicited by a segment involving a song about making a funny face. The high rhythmic quality of the song itself, as well as the expression of the young children in the segment probably contributed to its attraction. The average percent of viewing for the first pilot tape was 49%.

Segments involving a monologue by an adult character did not elicit as much attending behavior as a monologue by a puppet (wizard segments) or as much as did a dialogue between several adults or puppets. These findings are consistent with the previous results from the earlier programs viewed by the same children.

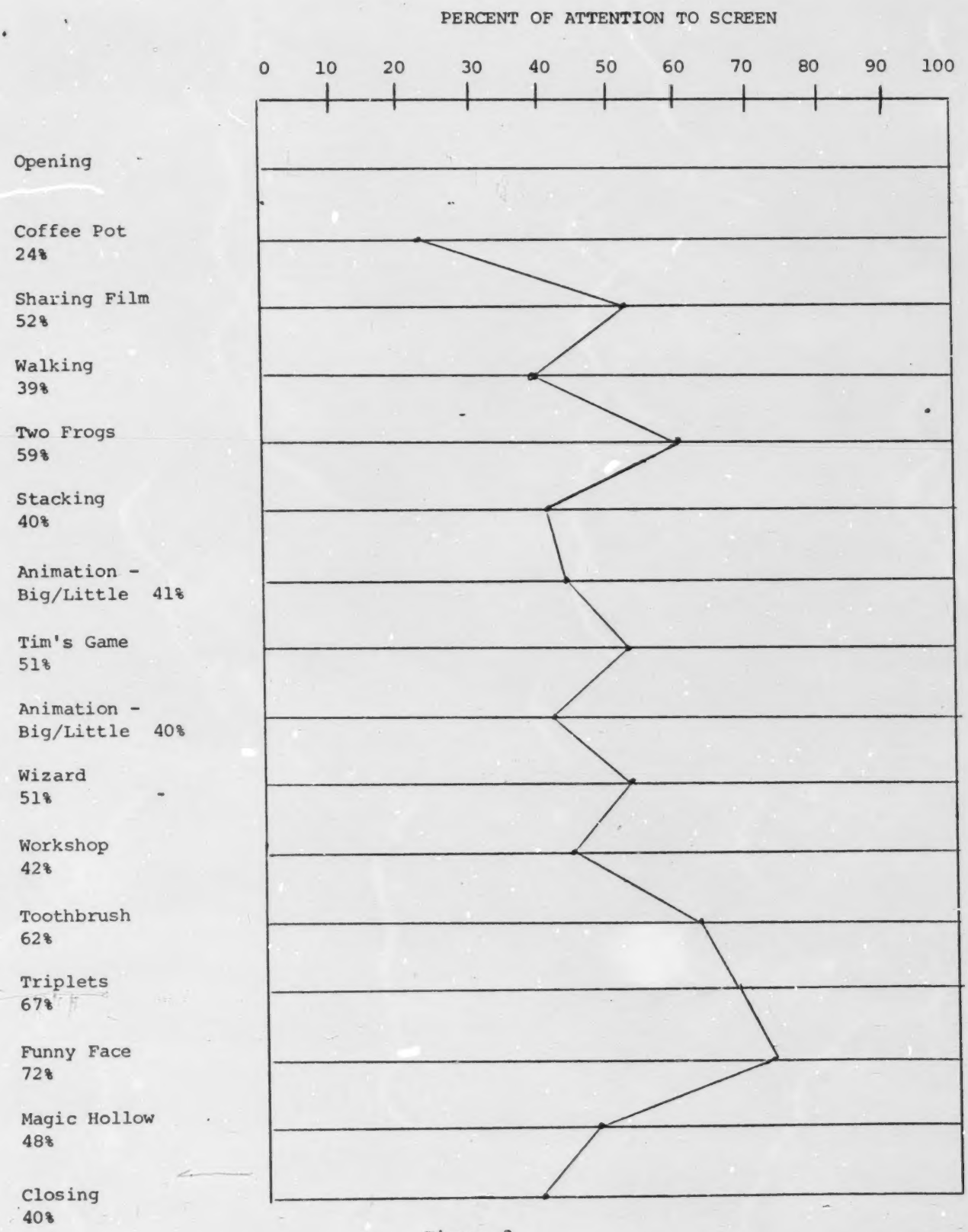

Figure 3

Percent of Attention to Screen for Segments of
Around the Bend - Pilot Tape 1

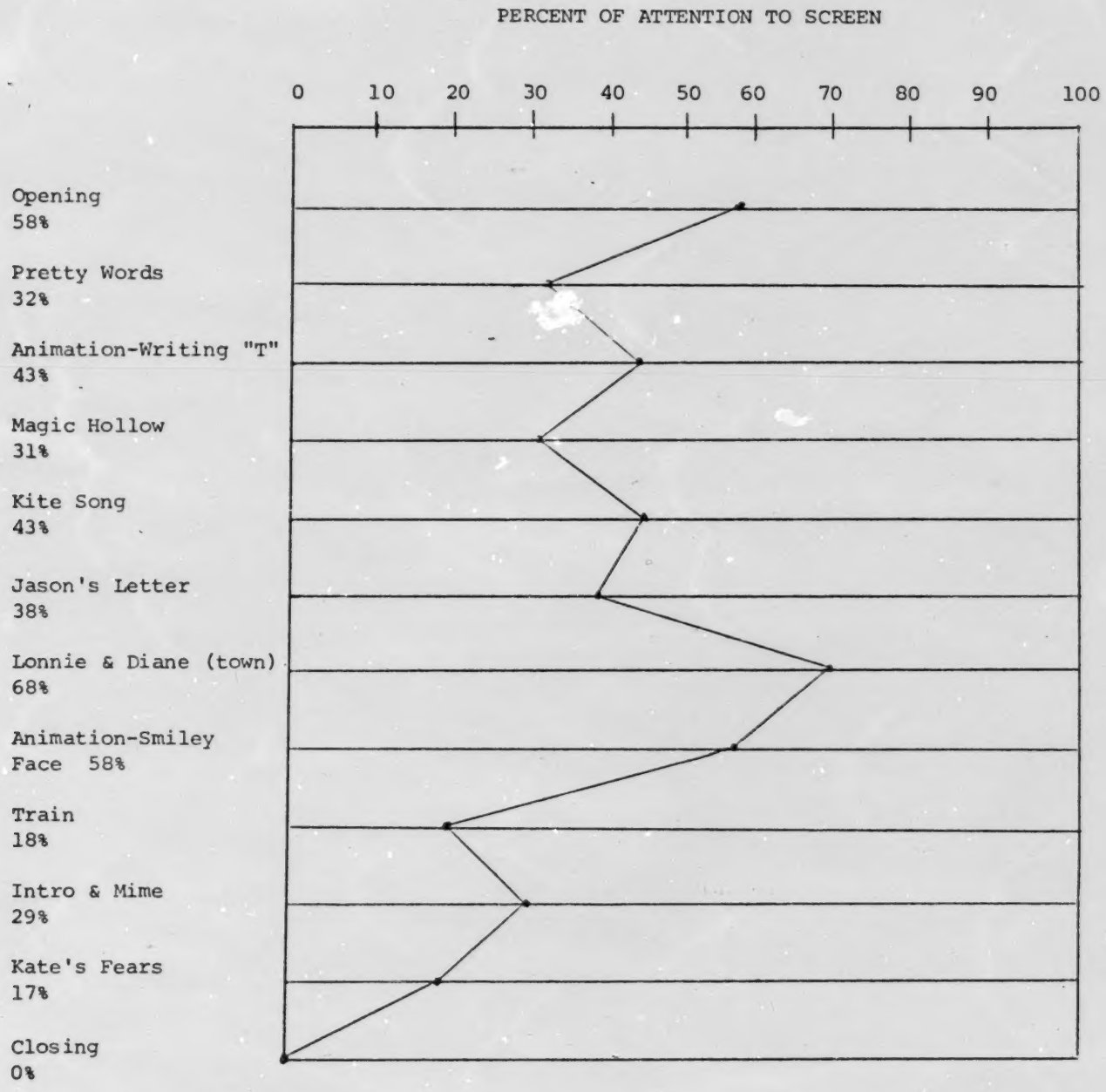

Figure 4

Percent of Attention to Screen for Segments of
Around the Bend - Pilot Tape 2

The second pilot tape showed essentially similar patterns of viewing behavior. The children attended most to a segment involving narration of a filmed sequence. They attended least to a monologue and to an extended dialogue sequence. Songs and animated sequences also held the children's interest.

The consistency of these results across both pilot tapes and across the segments from other programs indicate a consistent pattern of viewing behavior for the children in this sample. There was a marked preference for novelty, unpredictability, and surprise ending. The children preferred to watch dialogues rather than monologues, and animation or filmed sequences of events rather than the relatively static didactic presentation of adults speaking directly to the children.

A second major area of interest is the pattern of overt responses made by the children during the time they were exposed to the programs. Figures 5 and 6 show the percent of elicited responses and verbal and non-verbal enthusiasm for each of the segments taken from available programming, whereas Figures 7 and 8 show the percents for the two pilot tapes. For the sake of simplicity, verbal and non-verbal responses are combined for both categories. The percentage figures shown are derived from all categories except "No Response", and represent the percent of all overt responses in the "Elicited" and "Enthusiasm" classifications.

The broken line in these figures represents the percent of "enthusiasm" responses. Several of the segments which received the highest number of positive responses, elicited less overall viewing time, while others which produced the most viewing time produced fewer responses from the children.

The data presented in Table 3 shows a comparison of several segments taken from the pilot tapes and other programs on percent of viewing and

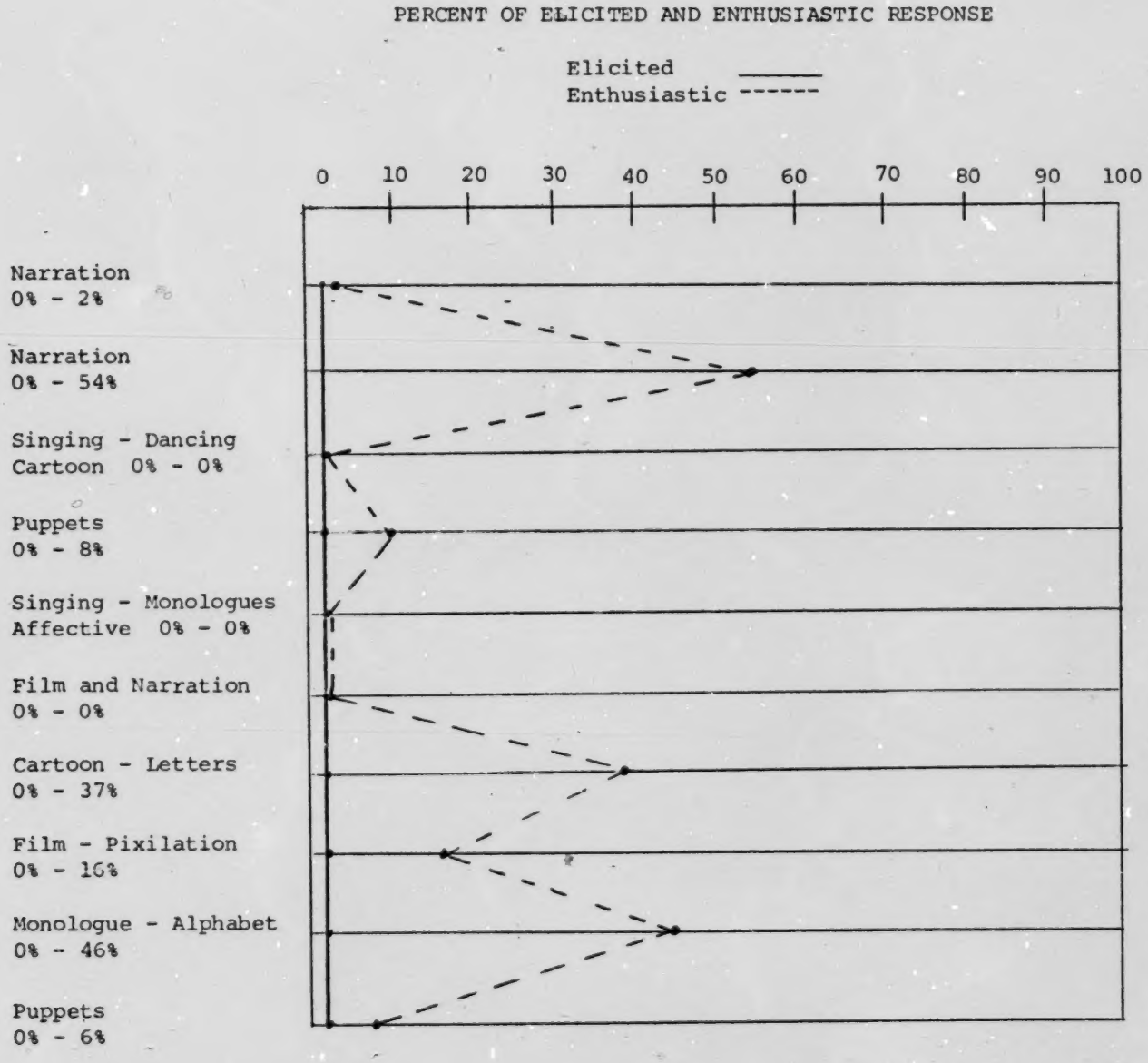

Figure 5

Percent of Elicited and Enthusiastic Responses for Segments of All Available Programs for Children - Tape 1

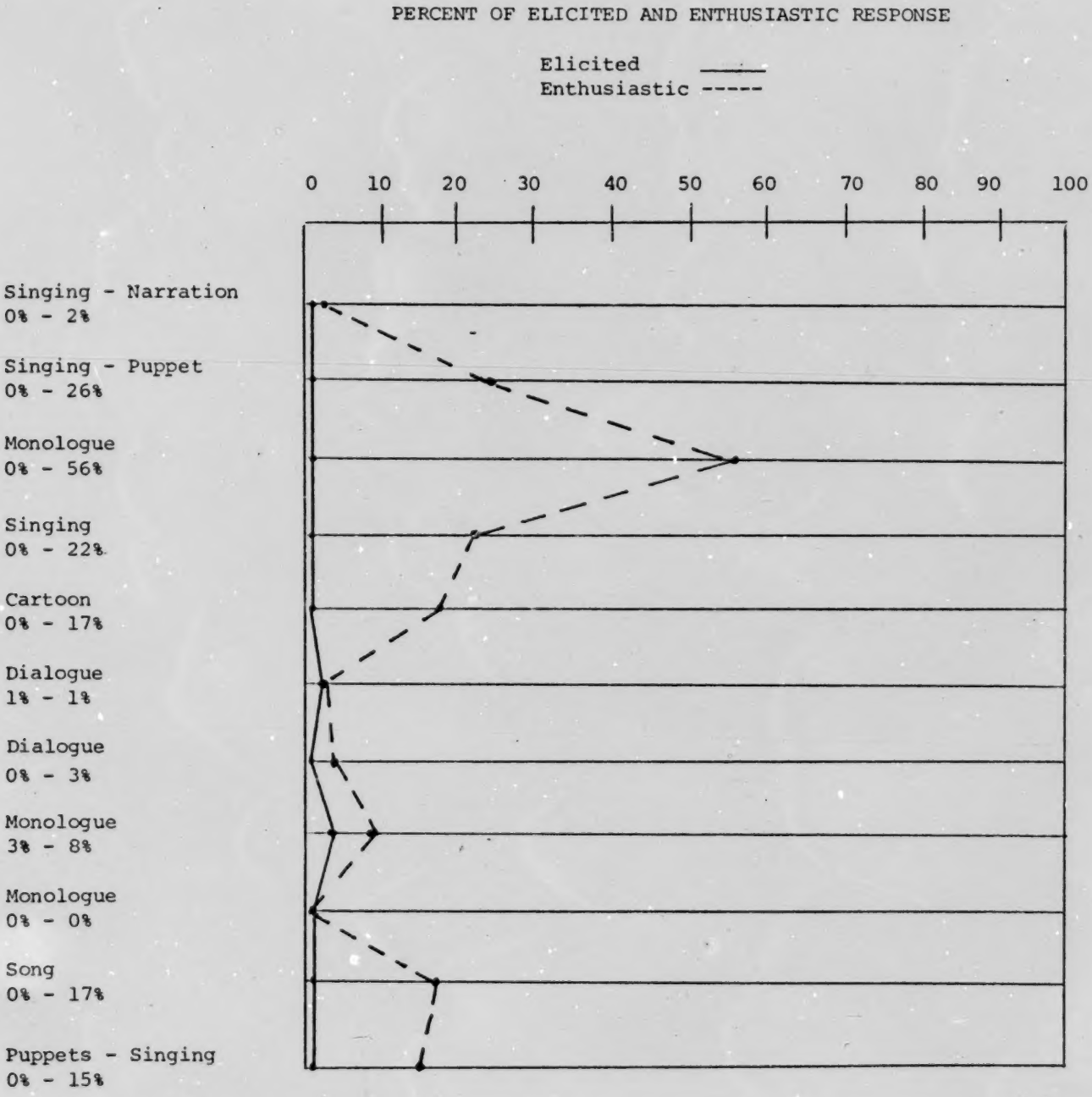

Figure 6

Percent of Elicited and Enthusiastic Response for Segments of All Available Programs for Children - Tape 2

PERCENT OF ELICITED AND ENTHUSIASTIC RESPONSE

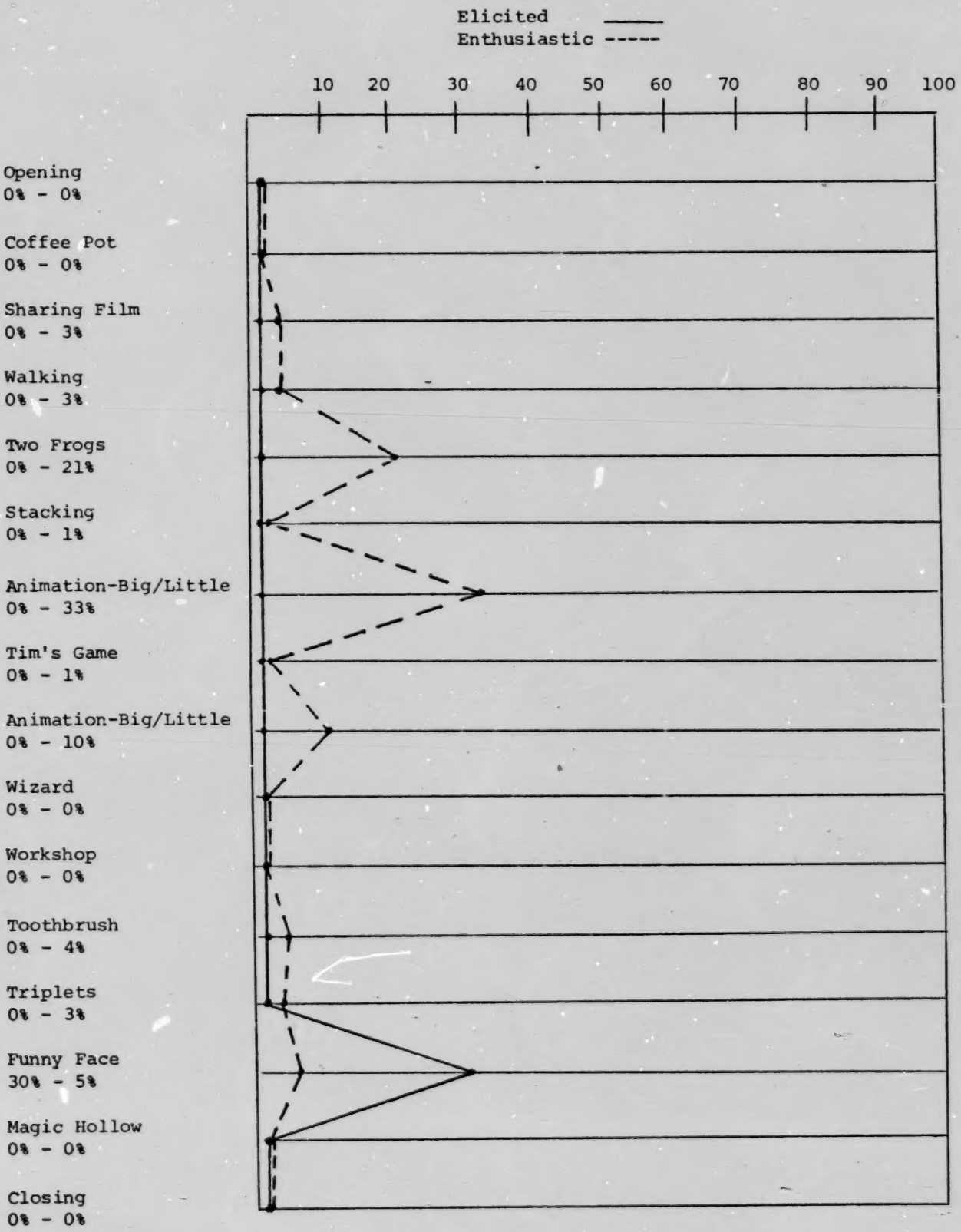

Figure 7

Percent of Elicited and Enthusiastic Response for Segments of Around the Bend - Pilot Tape 1

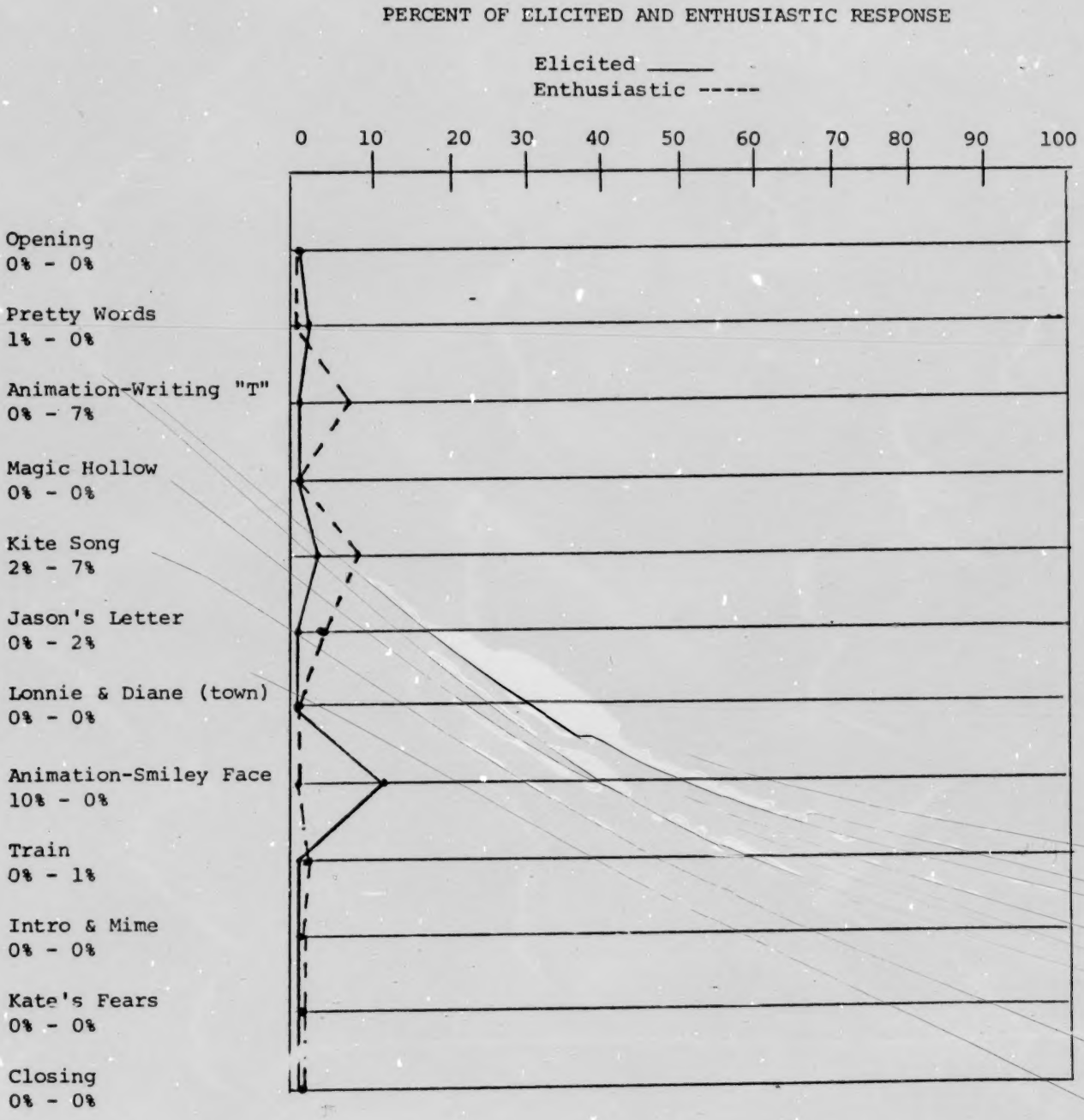

Figure 8

Percent of Elicited and Enthusiastic Response for Segments of Around the Bend - Pilot Tape 2

percent of enthusiasm. As is evident from the figures in the table, it is difficult to predict overt enthusiasm from the amount of viewing of a particular segment.

Table 3

Percent of Viewing and Enthusiasm

Segment	Percent Attention	Percent Enthusiasm
Cartoon - Sesame Street	91	37
Narration - Zoom	90	2
Puppets - Misterogers	68	8
Monologue - Sesame Street	73	56
Animation - Pilot 1	41	33
Song - Pilot 1	72	5
Narration - Pilot 2	68	0

Thus, analyses of data from observation of a group of preschool children indicated that children exhibit both active and passive patterns of viewing, with active patterns elicited by highly rhythmic, "bouncy" musical presentation, humerous cartoons or novel filming techniques. More passive viewing stems from narration or dialogue between two characters. However, long monologues addressing the children directly failed to hold attention for any length of time. There was little direct relationship between overt expressions of enthusiasm or pleasure and viewing time for any segment. Cartoons and films were most effective holding attention to the screen. However, children made a greater number of elicited responses to the two AEL pilot programs than they did to the segments taken from other preschool programs.

It is very possible that different styles of presentation elicit active and passive viewing styles. It seems likely that rapidly paced songs, animation, etc. tend to elicit more active viewing, while slower paced narration and dialogue elicit a more passive viewing pattern. Generally, children made the greatest percent of enthusiastic responses to song sequences, animation, and to events which were surprising or unusual in nature.

Elicited response was very infrequent for all programs, occuring in only 3 of the 21 segments taken from current children's programs. This is easily understood, since few, if any, of these shows make an effort to actively involve children. Both pilot tapes produced a higher number of elicited responses than did the segments from other programs. This was particularly true of the "Funny Face" song where children made the greatest number of elicited responses.

Although pilot tape 2 produced fewer enthusiastic responses than pilot tape 1, it did elicit responses from the children over a greater number of segments. Again, songs and animation were the most effective in eliciting these responses, while monologue and dialogue elicited the fewest. The consistency of these results indicate a stable pattern of responding and have major implications for planning future productions.

Summary

The production of a children's television program which elicits interest, responses, and active participation from its young viewers must be constructed of segments that provide a variety of high interest materials and techniques. The proper use of these segments implies that programming techniques must be identified and then implemented so that proper evaluations as to the receptivity of the techniques can be conducted.

Television is young as a medium, and it is continually growing. Each year great strides are being made in technique improvements. The techniques identified and discussed in this report are not intended to be examples of the only ones being used on children's television; they represent those basic techniques used in the production of AEL's television series. The order in which the techniques were discussed is not significant; the frequency for their usage was dependent upon the existing curriculum.

The key to providing interesting and appealing programming seems to be based upon variety and the use of short segments. Programs that rated high were those that contained a collection of programming techniques that were identified in the ten categories as generating high degrees of unelicited responses from children.

This report also attempted to relate the development and use of an observational system to evaluate children's responses to a number of television styles and modes of presentation. The technique has high inter-rater reliability, and provides a reliable estimate of patterns of behavior across time periods.

The setting of the observations is designed to replicate a more home-like environment than has been present in other recent studies, and should give a more accurate representation of children's unbiased preference in programming.

Only the most general conclusions can be drawn from a comparison across program segments and pilot tapes. Because of time limitations, it was not possible to alternate presentations of pilot tapes with other program segments, and this may have introduced a systematic bias into the children's behavior. Provided that resources are available, a follow-up study may be done to corroborate the findings presented above, using a more rigorous experimental design.

A second area for additional study concerns the viewing habits of children from different socioeconomic backgrounds. The nursery school children who viewed the tapes in the second procedure attended to the program approximately 70% of the time, while the Head Start children enrolled in the nursery school viewed considerably less frequently. It would be highly relevant to ascertain whether those results are atypical or whether a definite bias exists in lower income children's viewing habits.

It appears that if individuals or organizations who are responsible for producing television programs are concerned with children's viewing habits and attending behaviors, then use of such information could provide for a program with higher receptivity on the part of the viewing audience--the children.

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Appendix A

NAME _____ H.V. _____ DATE _____

AGE _____ SEX _____ GROUP _____

	NVR	VR	NR	V ENTHUS	NV ENTHUS	V NEG	NV NEG	
1st 5 min.								0 ¼ ½ 3/4 ALL
2nd 5 min.								0 ¼ ½ 3/4 ALL
3rd 5 min.								0 ¼ ½ 3/4 ALL
4th 5 min.								0 ¼ ½ 3/4 ALL
5th 5 min.								0 ¼ ½ 3/4 ALL
last 5 min.								0 ¼ ½ 3/4 ALL

REMARKS:

Television Response Code Sheet

Appendix B

NAME _____ AGE _____ SEX _____

Tape 1

	Program Unrelated Response	Nonverbal Response	Verbal Response	No Response	Verbal Enthusiasm	Nonverbal Enthusiasm	Nonverbal Negative Response	Verbal Negative Response	Cross-Child Interaction
arration oom									
inging- ancing oom									
artoon oom									
uppets isterogers									
inging- onologue-Aff. isterogers									
ilm and arration esame Street									
artoon - etters esame Street									
ilm - ixilation esame Street									
onologue - lphabet esame Street									
uppets esame Street									

REMARKS:

NAME _____ AGE _____ SEX _____

Tape 2

	Program Unrelated Response	Nonverbal Response	Verbal Response	No Response	Verbal Enthusiasm	Nonverbal Enthusiasm	Nonverbal Negative Response	Verbal Negative Response	Cross-Child Interaction
ging - ration ame Street									
ging - pet ame Street									
ologue ame Street									
ging same Street									
rtoon same Street									
alogue same Street									
alogue pt. Kangaroo									
nologue pt. Kangaroo									
nologue pt. Kangaroo									
ng pt. Kangaroo									
ppets - nging pt. Kangaroo									

EMARKS:

NAME _____ AGE _____ SEX _____

Pilot Tape 1

	Program Unrelated Response	Nonverbal Response	Verbal Response	No Response	Verbal Enthusiasm	Nonverbal Enthusiasm	Nonverbal Negative Response	Verbal Negative Response	Cross-Child Interaction
ening									
ffee Pot									
aring Film									
lking									
o Frogs									
acking									
imation-g/Little									
m's Game									
imation-g/Little									
zard									
orkshop									
oothbrush									
riplets									
unny Face									
agic Hollow									
losing									

NAME _____ AGE _____ SEX _____

Pilot Tape 2

	Program Unrelated Response	Nonverbal Response	Verbal Response	No Response	Verbal Enthusiasm	Nonverbal Enthusiasm	Nonverbal Negative Response	Verbal Negative Response	Cross-Child Interaction
pening									
retty Words									
nimation-riting "T"									
agic Hollow									
ite Song									
ason's etter									
onnie & iane (town)									
nimation-miley Face									
rain									
ntro & Mime									
ate's Fears									
losing									

Appendix C

ANIMATION

Segments That Ranked High in Interest

a. Letters or numerals writing themselves to show the correct method of writing. (Objects such as buttons, blocks, or coins were lined up and added per frame.)

b. Charts with several letters appearing and the child asked to identify a specific letter. These specific letters (answers) "popped-out" or changed colors to indicate correct answers.

c. Animated figures or objects appearing in a rhythmic pattern to be counted. Numbers then appeared beside objects to reinforce numeral recognition.

d. Series of rockets with specified letters written on their sides. Specific letter requested "blasted off" screen.

e. Cartoon animations of the cyclic nature of water and the seasonal changes of a tree.

f. Animated lumps of clay changing into recognizable shapes.

g. A log house constructing itself, one log at a time.

h. Shapes (such as circles, triangles, etc.) drawing themselves.

i. Simplified animated stories using cut-out figures manipulated frame by frame.

j. Objects such as toys, blocks, and dolls marching across the screen (pixilation)

Segments That Ranked Low in Interest

a. Animated collage construction (this was an add-on picture).

b. Animated cycle on the rainbow (used special effects).

FILMS

Segments That Ranked High in Interest

a. Segments showing children engaging in such activities as playing and making things.

b. Segments showing animals, especially young animals with their mothers.

c. Segments showing Patty (the television teacher) actively involved in things, such as riding on carnival devices, on a bus, or in a car.

d. Segments showing people, such as the blacksmith or glassblower.

e. Short segments of children singing:

f. Segments showing children getting haircuts, shopping, or at school.

g. Films narrated by puppets or children.

Segments That Ranked Low in Interest

a. Segments that took tours of facilities, such as libraries, markets, or art galleries.

b. Long nature films, such as winter walks and spring walks.

c. Filmed trips to the dairy farm (over 20 minutes long), to the ocean, or state parks.

VISITORS

Segments That Ranked High in Interest

a. Visit with Tom, during which he drew for the children.

b. Visit with Dick, during which he showed puppets.

c. Visits from Linda or Pam, during which they would help Patty do things.

d. Group visits for special occasions such as a birthday, Halloween, or Christmas party.

e. Appearance of children (who were used as on-camera audiences for musicians or as film subjects).

f. Visit of musician or craftsman (whether in the studio or on film)

Segments That Ranked Low in Interest

a. Patty visiting Tom in workshop to watch him make things.

b. Dick showing animals in the barn.

c. Lengthy visits that involves a lot of dialogue between Patty and visitor and which showed little else.

ARTS AND CRAFTS

Segments That Ranked High in Interest

a. Working with clay or play dough.

b. Construction of collages by Patty.

c. Construction of paper bag masks and finger puppets.

d. Making of holiday decorations.

e. Fingerpainting.

f. Drawing done on-camera by Tom.

g. Paper sculpturing.

h. Sponge painting.

i. Showing of other children's artwork.

j. Short sessions of coloring accompanied by music.

Segments That Ranked Low in Interest

a. Construction of box house and furniture.

b. Discussions of paintings and of trip to art gallery.

c. Construction of paper airplanes.

ANIMALS

Segments That Ranked High in Interest

a. Film segments of young animals.

b. Animals that were active on camera (eating or playing)

c. On-camera activity by Patty's pet cat, Muffin

Segments That Ranked Low in Interest

a. Animals that were inactive (sleeping or lying around).

b. Segments in which two adults discussed the animals for long periods of time.

c. Animals that were confined to cages or aquariums

AUDIO AND PERCEPTUAL DISCRIMINATION

Segments That Ranked High in Interest

a. Letters and numerals written on a large tablet or cards.

b. Flash cards, giving the viewer a chance to recognize specified letters or numerals.

c. Tape recorder or record playing sound to be identified.

d. Around the Bend game which required recognition of colors and shapes.

e. Letters and numerals selected with the "help" of puppets.

f. Cut-outs to associate tools with jobs (i.e., ax with fireman).

g. Perception lessons done by Patty and Roy puppet together.

h. Jack-in-the-box and/or model train to introduce letters.

i. Discrimination games using simple objects for terms (same/different and large/small).

j. Numerals and letters formed from clay.

k. Games of "what is it?" using partially exposed or unusual angle shots.

l. Counting exercises in animation or by the puppets.

Segments That Ranked Low in Interest

a. Teaching of "sets" using small objects on table.

b. Extended review lessons on letter recognition in which more than three letters were used consecutively.

PUPPETS

Segments That Ranked High in Interest

a. Puppets singing.

b. Magic Hollow episodes and stories.

c. Patty doing cognition activities with Roy puppet.

d. Professor with his word machine.

e. Algie used by Patty to help find letters of the alphabet.

f. Puppets narrating film trips.

g. Puppets joining in exercises or musical activities.

h. Stories acted out by hand puppets (especially Magic Hollow characters)

i. Showing how to make puppets.

j. Puppet skits of quiz shows such as "What's That Song?"

Segments That Ranked Low in Interest

a. Marionettes used to act out songs or stories.

b. Construction of shadow and finger puppets.

c. Fingerplays

MODELS AND 3-D OBJECTS

Segments That Ranked High in Interest

a. Jack-in-the-box, introducing letters and numerals

b. H-O gauge model train.

c. Rubber figures used to discuss family relationships.

d. Stuffed animals.

e. Mechanical toys.

f. Large model of Patty's neighborhood, especially when things on it were manipulated.

g. Scale model house, trucks, etc., used as symbolic representatives from which to discuss the large world.

h. Scientific instruments, such as telescope or tuning fork being demonstrated.

Segments That Ranked Low in Interest

a. Small toys and objects used for comparison of size or to establish "sets"

b. Objects that were discussed for long periods without the introduction of new ones.

MUSIC

Segments That Ranked High in Interest

a. Songs that had a strong beat and rhythm.

b. Musical instruments played on camera.

c. Singing of nonsense word songs by frog puppet.

d. Film segments showing children singing.

e. Marching to music (when reinforced by showing puppets marching, film clips of marching bands, etc.).

f. Songs sung by "Muppet-style" puppets.

g. Visitors singing during parties.

h. Playing of xylophone or Orff instruments on simple songs.

i. Teaching of new songs by Patty.

j. Use of animated objects or models while listening to records (i.e., train while playing Little Red Caboose).

Segments That Ranked Low in Interest

a. Songs pantomimed by performer while in costume (Princess, etc.).

b. Songs acted out by marionettes.

c. Moving to mood music except when in Raggedy Ann segments.

d. Ballet dancing.

e. Filmed segments of folk dancing.

STORIES

Segments That Ranked High in Interest

a. Stories in which Patty would pause to make comments or ask questions during the reading.

b. Stories acted out in costume.

c. Stories in which Patty would use appropriate character voices, such as a baby voice during parts of the dialogue being read.

d. Stories with single illustrations or shot with slides if the pictures tended to be cluttered.

e. Stories in which the illustrations were shot from camera cards, so there could be zooms and movement across the illustrations.

f. Original stories written by various show personalities when authorship was identified beforehand.

g. Stories acted out by Magic Hollow characters.

h. Stories involving considerable emotion or mystery.

Segments That Ranked Low in Interest

a. Stories read by characters in costume.

b. Stories dramatized by marionettes.

c. Long stories.

d. Stories after which Patty asked a lot of questions.